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21-Nov-2024

Application note – How to configure the FC3-SC FACET Card.

Introduction:
We offer three kinds of this card:

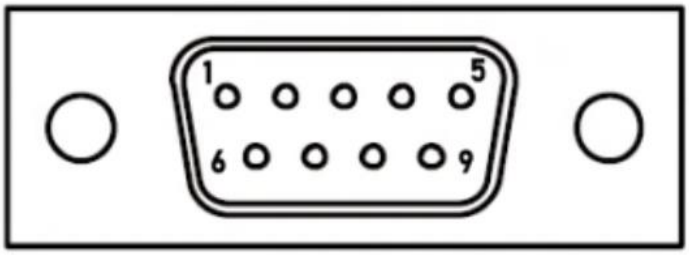
FC3-SC-S1C1 (DB9-port1: CAN-BUS, DB9-port2: SERIAL)

FC3-SC-S2 (DB9-port1: SERIAL, DB9-port2: SERIAL)

FC3-SC-C2 (DB9-port1: CAN-BUS, DB9-PORT2: CAN-BUS)

DB-9 pin out:

Pin	RS232	RS485 full	RS485 half	CAN bus
1	NC	NC	NC	NC
2	RX	RXP	N/A	CAN_L
3	TX	TXN	DATAN	CAN_GND
4	NC	NC	NC	NC
5	GND	GND	GND	CAN_GND
6	GND	GND	GND	CAN_GND
7	RTS	TXP	DATAP	CAN_H
8	CTS	RXN	N/A	VCC_CAN
9	N/A	N/A	N/A	VCC_CAN



RS-232 cable Distance compare to bitrate: (we use bitrate 115200 => max 8 meters, 9600 => max 100 meters)

Maximum Cable Length (meters)	Maximum Baud Rate*
1600	600
800	1200
400	2400
200	4800
100	9600
50	19,200
25	38,400
16	57,600
8	115,200

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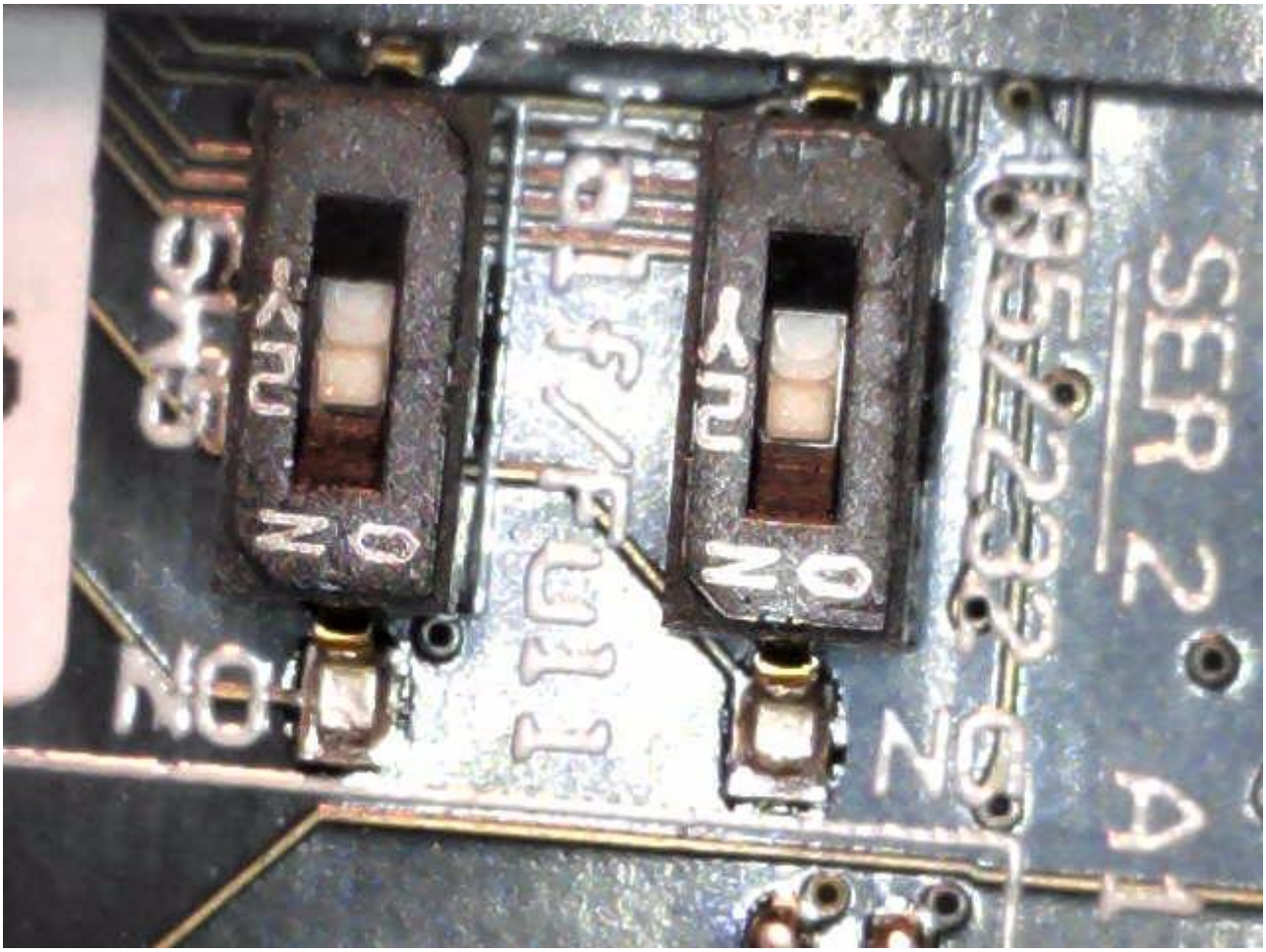
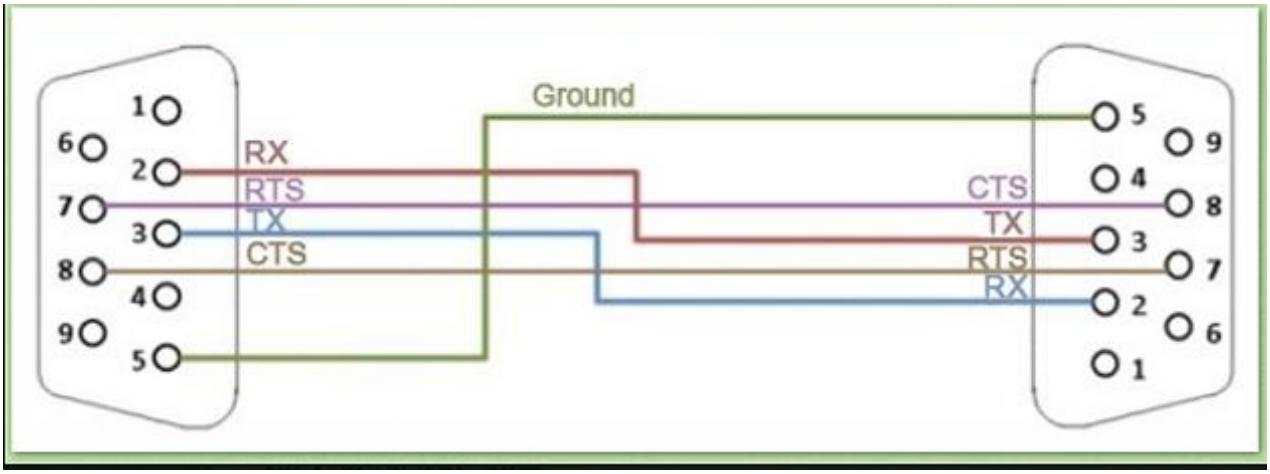
Serial:

HW configuration: RS-232





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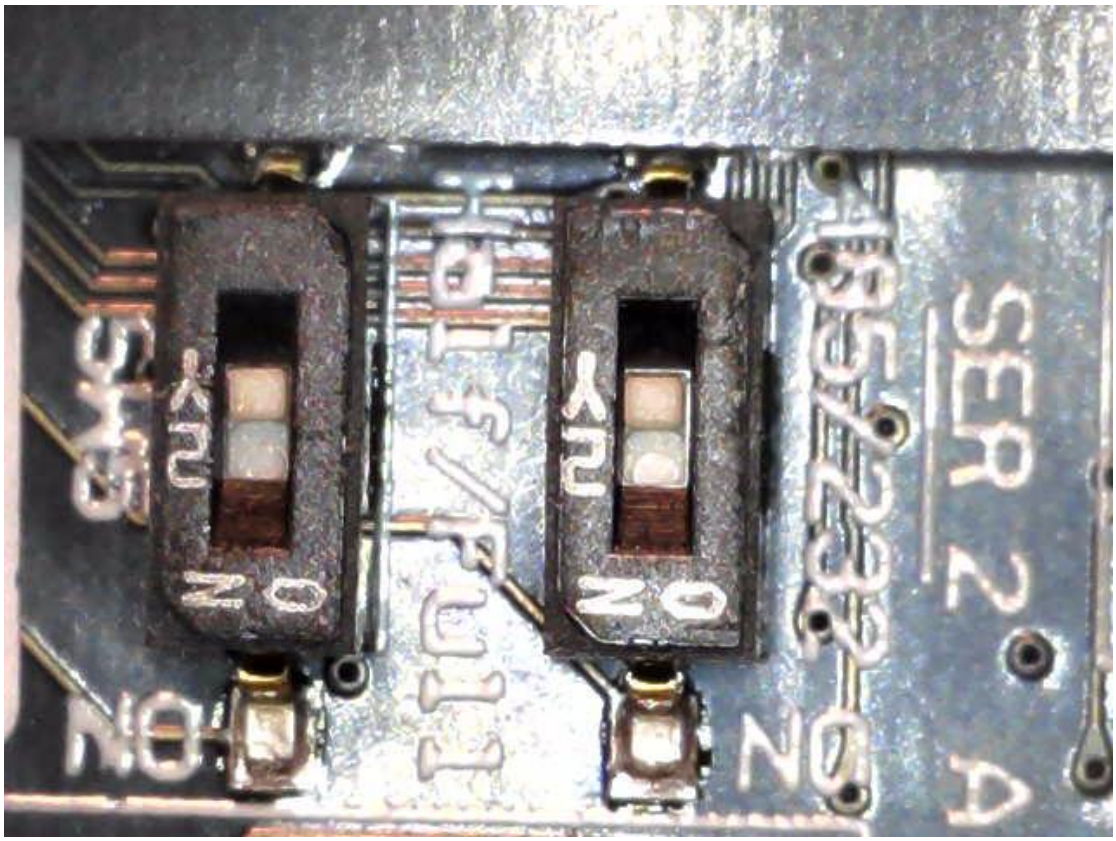
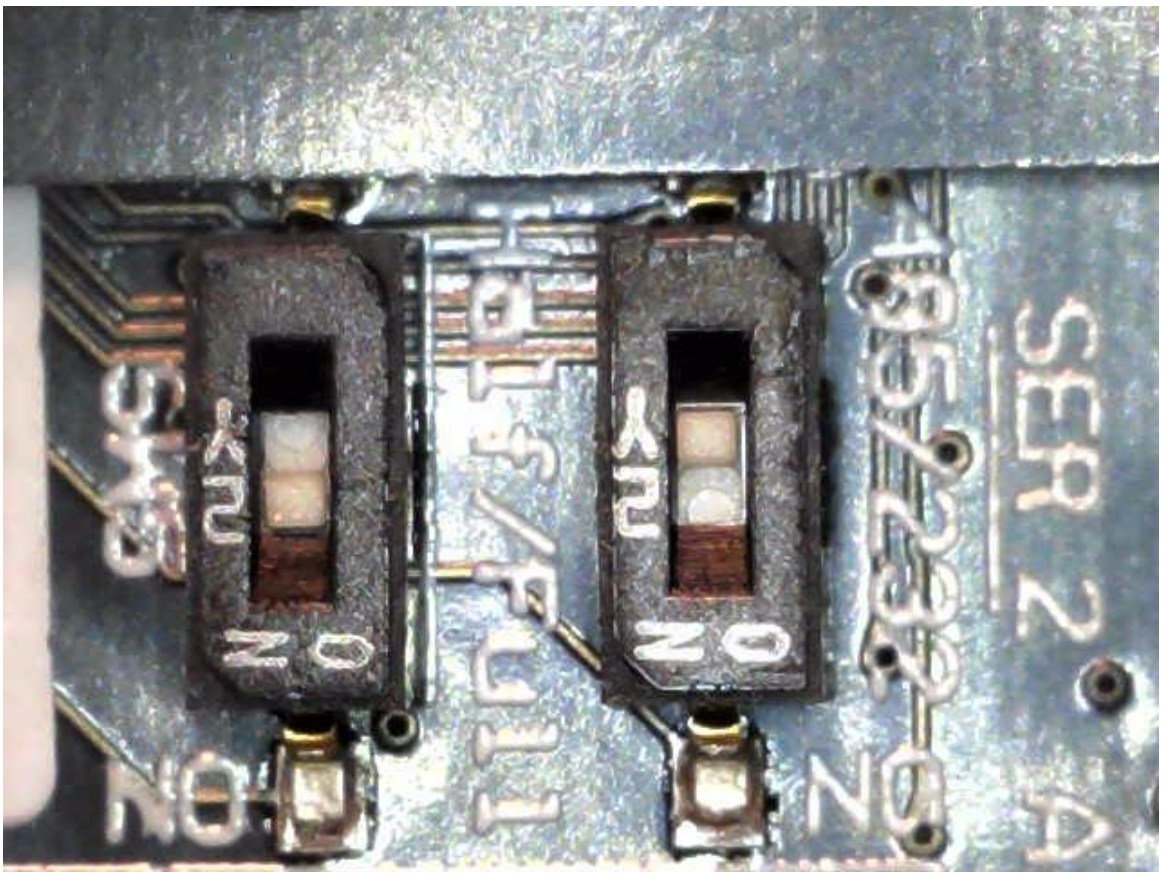
HW configuration: RS-485 Half Duplex



HW configuration: RS-485 Full Duplex



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Two examples of using the Serial port:

LINUX
SERIAL PORT

Find all ttyUSB devices

```
sudo dmesg | grep tty

sudo cat /dev/ttyUSB*
```

1. Change X to number of your ttyUSB
   a. for transmit

      ```
      sudo minicom -D /dev/ttyUSBX
      ```

   b. for configuration serial

      ```
      sudo minicom -s /dev/ttyUSBX
      ```

2. Change user to root sudo -i

   ```
   i2cdetect -l
   ```

   a. exit form every minicom in terminals
   b. change X to number of your ttyUSB
   c. configure your serial port:

```
RS-232 115200 HW-FLOW-CONTROL-OFF
sudo stty -F /dev/ttyUSBX
1:0:1cb2:0:3:1c:7f:15:4:5:1:0:11:13:1a:0:12:f:17:16:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0

RS-232 9600 HW-FLOW-CONTROL-OFF
sudo stty -F /dev/ttyUSBX
1:0:cbd:0:3:1c:7f:15:4:5:1:0:11:13:1a:0:12:f:17:16:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0

RS-232 115200 HW-FLOW-CONTROL-ON
sudo stty -F /dev/ttyUSBX
1:0:80001cb2:0:3:1c:7f:15:4:5:1:0:11:13:1a:0:12:f:17:16:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0

RS-232 9600 HW-FLOW-CONTROL-ON
sudo stty -F /dev/ttyUSBX
1:0:80000cbd:0:3:1c:7f:15:4:5:1:0:11:13:1a:0:12:f:17:16:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0

RS-485 half - 9600
sudo stty -F /dev/ttyUSBX
1:0:cbd:0:3:1c:7f:15:4:5:1:0:11:13:1a:0:12:f:17:16:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0

RS-485 half - 115200
```

```
sudo stty -F /dev/ttyUSBX
1:0:1cb2:0:3:1c:7f:15:4:5:1:0:11:13:1a:0:12:f:17:16:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0
RS-485 Full - 9600
sudo stty -F /dev/ttyUSBX
1:0:cbd:0:3:1c:7f:15:4:5:1:0:11:13:1a:0:12:f:17:16:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0

RS-485 Full - 115200
sudo stty -F /dev/ttyUSBX
1:0:1cb2:0:3:1c:7f:15:4:5:1:0:11:13:1a:0:12:f:17:16:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0:0
```

c. Give priority to the serial port

```
sudo chmod 777 /dev/ttyUSBX
sudo dd if=/your/directory/file of=/dev/ttyUSBX bs=1M status=progress
```

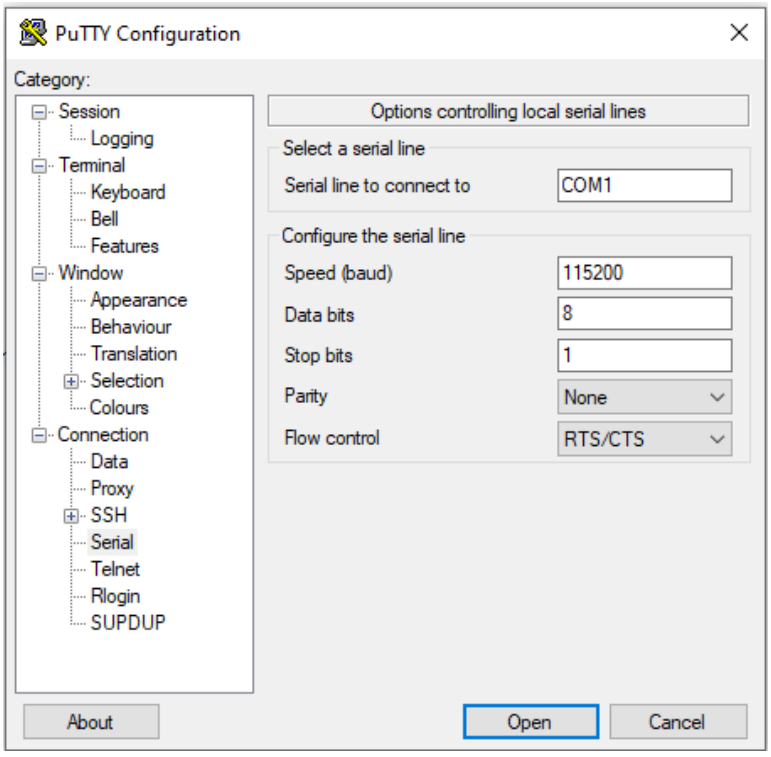
Or

```
sudo echo "hello world" > /dev/ttyUSBX
```

WINDOWS 10

SERIAL PORT

1. Install all drivers from the C-LAB web site: Windows-10-derivers-Fitlet3
2. Verify the COM port of FC3-SC-S2/S1 exists in the Device Manager and note its number
3. Install PuTTY application
4. Open the PuTTY application
   a. Change from SSH to Serial
   b. Change the Bitrate speed to preferred (9600, 115200, etc.)
   c. Change the COM port to one you found in the Device Manager
   d. Click on “Open” button



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WINDOWS 10

CANBus

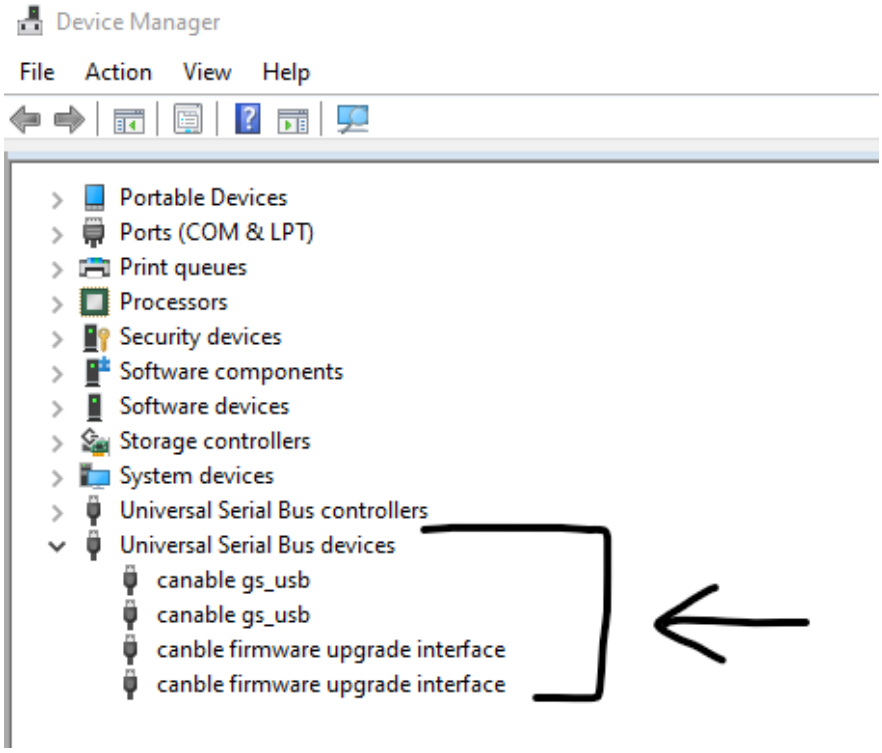
1. Configure the switches on FC3-SC-C2 like that

   SW3 – OFF | SW1 - OFF, to USB Can mode

   SW4 - ON | SW2 - ON, if you connect only 2 CAN-bus devices (point to point) use 120Ω termination

   OR

   SW4 – OFF | SW2 - OFF, if you connect many CAN-bus devices
2. Power on the DUT
3. Boot to Windows 10
4. Install all drivers from the C-LAB web site: [Windows-10-derivers-Fitlet3]
5. Download and install an open source application (cangoroo) for windows [canable.web]
6. Verify 2 can-bus serial devices are detected, go to Device Manager



7. Configure in the application serial speed 115200 (the Main chip: STM32 work only on this speed). Pinouts: port1,port2: pin2=CAN-L pin5=GND pin7=CAN-H

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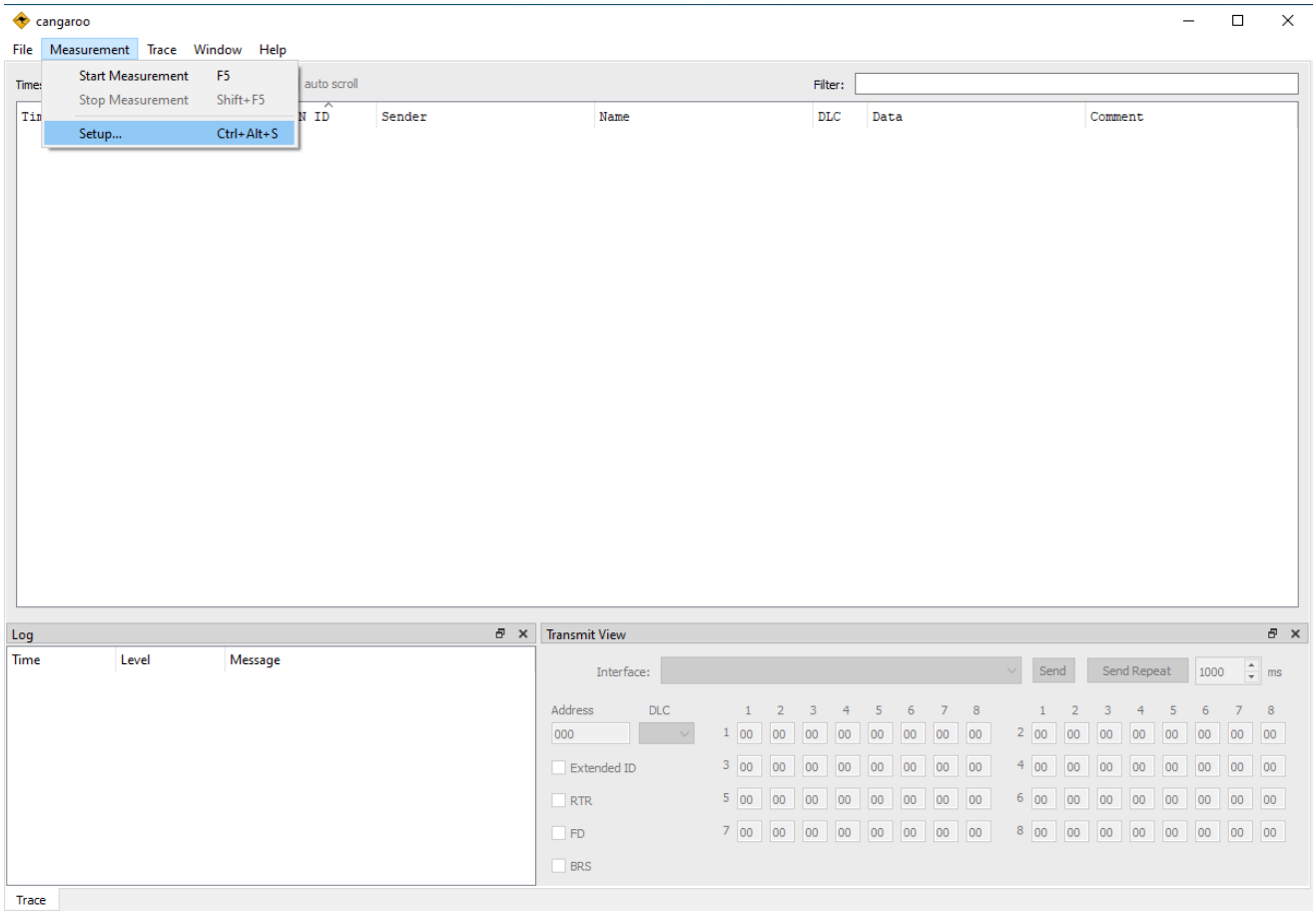

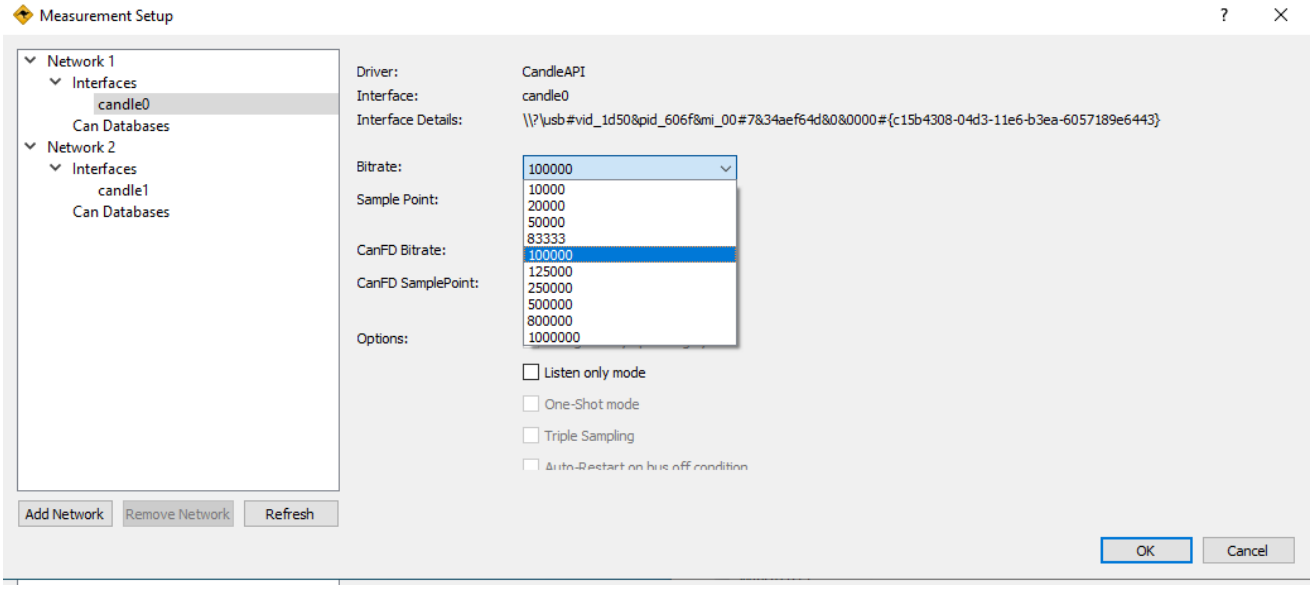

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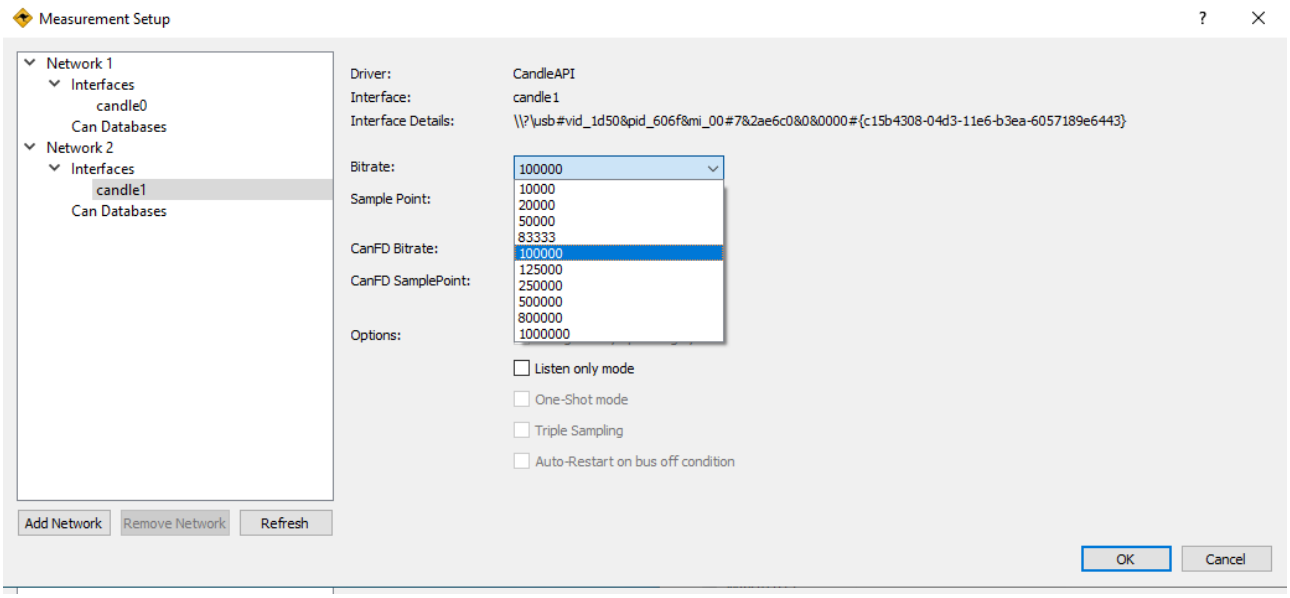

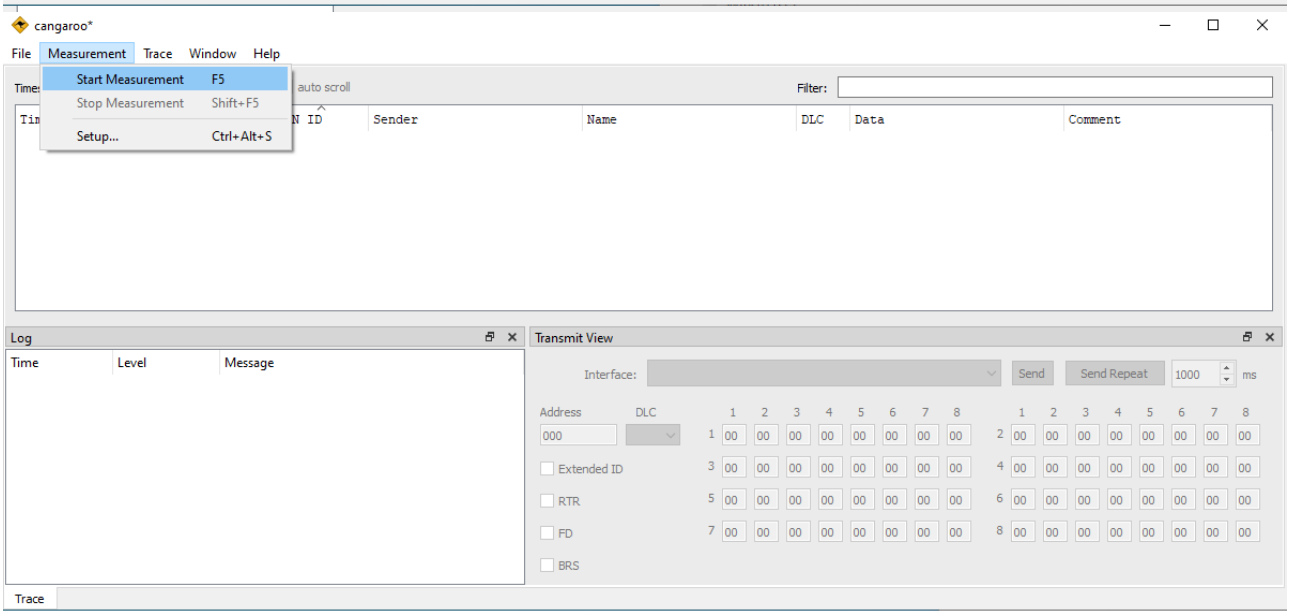

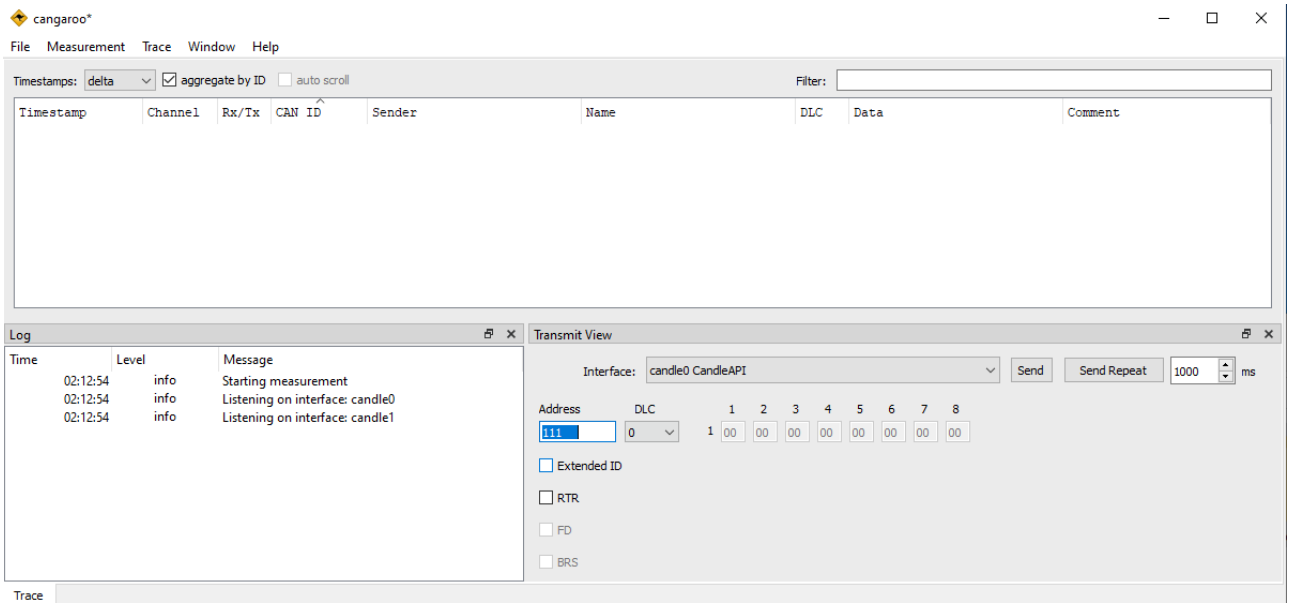

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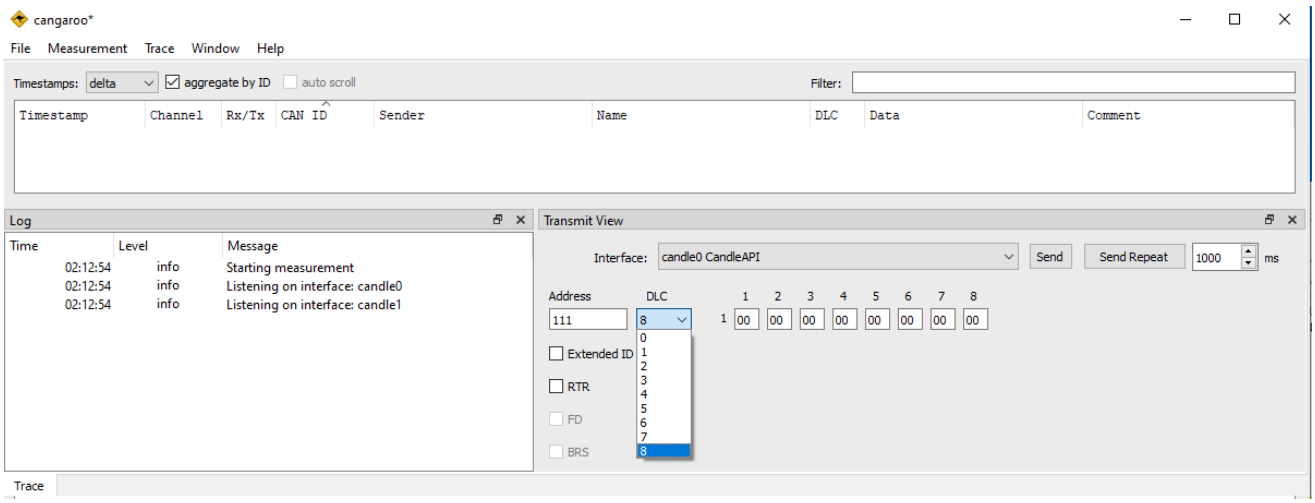

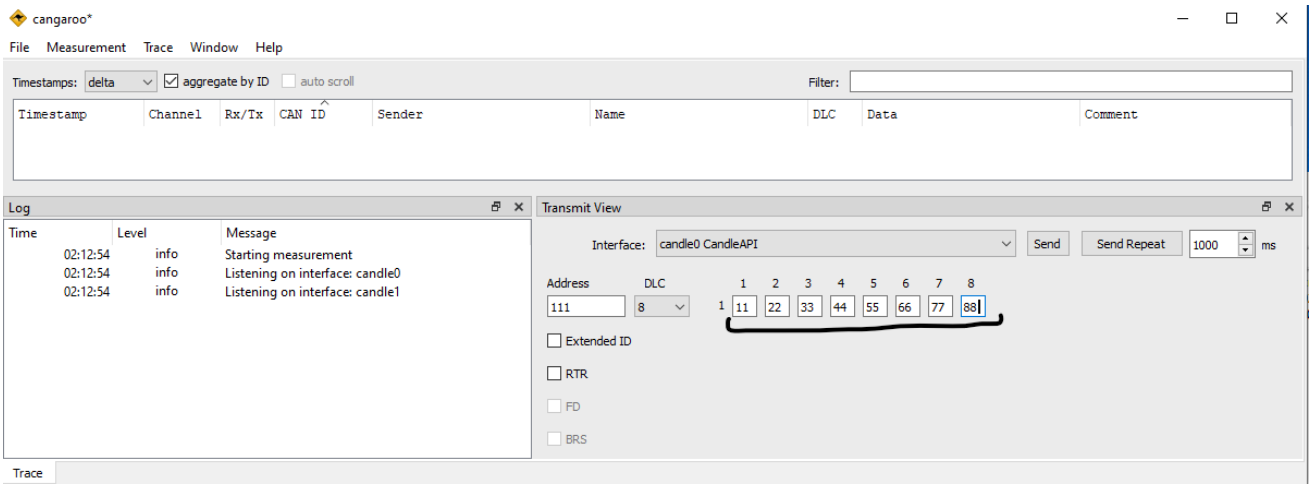

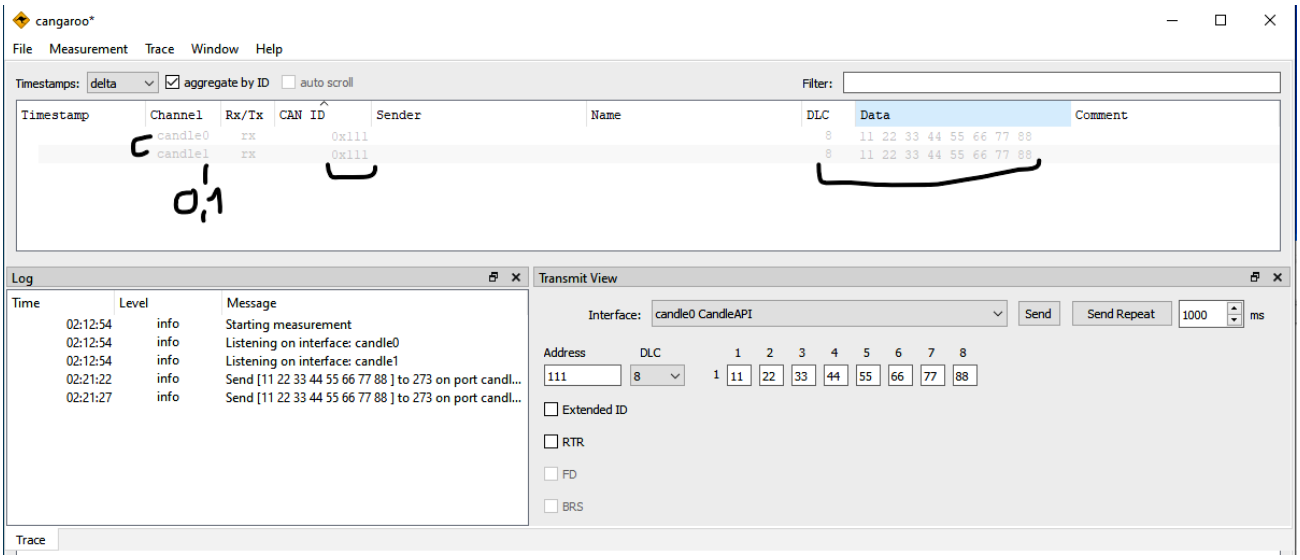

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LINUX

CANBus

1. Configure the switches on FC3-SC-C2 like that
   SW3 - ON | SW1 - ON, for Network CAN mode
   SW4 - ON | SW2 - ON, if you wish to connect only 2 CANBus devices (point to point) use 120Ω termination
   OR
   SW4 - OFF | SW2 - OFF, if you wish to connect many CANBus devices
   Pinout: port1, port2: pin2=CAN-L | pin5 = GND | pin7=CAN-H
2. Power ON and boot to Linux Mint 21.1 vera
3. Verify CAN device:

```
ls /sys/class/net/can*
ip a
```

4. Configure the CAN network interfaces (speed – 1M bitrate):

```
ip link set can0 type can bitrate 1000000
ip link set can1 type can bitrate 1000000
```

5. Wake up the network CANBus devices

```
ip link set can0 up
ip link set can1 up
```

6. Read every CANBus DATA-IN from all used CANBus devices in a background

```
candump any &
```

7. Or read every CANBus DATA-IN from CANBus X (In this particular terminal session)

```
candump X
```

8. Send from port1 to another device:

```
cansend can0 111#1122334455667788
```

9. Send from port2 to another device:

```
cansend can1 111#1122334455667788
```

Further information

https://fit-iot.com/web/
www.fit-pc.com/wiki

Technical support:

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